

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-37. (Cancelled)

38. (Cancelled)

39. (Currently Amended) The method according to claim ~~38~~46, wherein said ~~step of~~ jointly detecting signal information from at least a subset of said plurality of transmitting nodes is further based on a complex channel representation related to said plurality of receiving nodes ~~(120)~~ and said plurality of transmitting nodes ~~(10)~~.

40. (Currently Amended) The method according to claim ~~38~~46, wherein said complex channel representation is a complex channel gain matrix.

41. (Currently Amended) The method according to claim ~~38~~40, wherein said soft complex signal information retains phase and amplitude information.

42. (Currently Amended) The method according to claim ~~38~~46, wherein said soft complex signal information is collected from said plurality of receiving nodes ~~(120)~~ in a central node ~~(130)~~, and said ~~step of~~ jointly detecting signal information is performed by the central node ~~(130)~~.

43. (Cancelled)

44. (Currently Amended) The method according to claim ~~43~~46, wherein said ~~step of~~ performing, for each group, joint detection of signal information is further based

on a complex channel representation related to the receiving nodes of the group and at least a subset of said plurality of transmitting nodes.

45. (Currently Amended) The method according to claim 43~~46~~, wherein at least two of said multiple groups are partially overlapping.

46. (Currently Amended) ~~The method according to claim 43,~~ A method for detecting signal information in a wireless communication network having a number of nodes for communication, said method comprising:

- each of a plurality of receiving nodes converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups:

- collecting soft complex signal information associated with said plurality of receiving nodes over a transport network;

- jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said collecting soft complex signal information comprises collecting, for each group, soft complex signal information associated with the receiving nodes of the group, and said jointly detecting comprises performing, for each group, joint detection of signal information based on the collected soft complex signal information associated with the group;

wherein said ~~step of~~collecting, for each group, soft complex signal information associated with the receiving nodes of the group comprises the ~~step of~~exchanging soft complex signal information between the receiving nodes of the group.

47. (Previously Presented) The method according to claim 46, wherein each group comprises a number of adjacent receiving nodes.

48. (Previously Presented) The method according to claim 47, wherein each of the adjacent receiving nodes within a group performs joint detection of signal information transmitted from at least a subset of said plurality of transmitting nodes based on exchanged soft complex signal information.

49. (Currently Amended) The method according to claim 43~~46~~, wherein said step of performing, for each group, joint detection is performed by a signal processing node associated with the group of receiving nodes.

50. (Previously Presented) The method according to claim 49, wherein said signal processing node is a designated receiving node that belongs to the corresponding group.

51. (Currently Amended) ~~The method according to claim 43,~~ A method for detecting signal information in a wireless communication network having a number of nodes for communication, said method comprising:

- each of a plurality of receiving nodes converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups;

- collecting soft complex signal information associated with said plurality of receiving nodes over a transport network;

- jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said collecting soft complex signal information comprises collecting, for each group, soft complex signal information associated with the receiving nodes of the group, and said jointly detecting comprises performing, for each group, joint detection of signal information based on the collected soft complex signal information associated with the group;

further comprising the steps of:

- generating, for each group, decoded signal information;
- transporting, for each group, corresponding decoded signal information to a combining point (140) for combining multiple copies of the same decoded signal information.

52. (Currently Amended) ~~The method according to claim 43,~~ A method for detecting signal information in a wireless communication network having a number of nodes for communication, said method comprising:

- each of a plurality of receiving nodes converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups:

- collecting soft complex signal information associated with said plurality of receiving nodes over a transport network;

- jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said collecting soft complex signal information comprises collecting, for each group, soft complex signal information associated with the receiving nodes of the group, and said jointly detecting comprises performing, for each group, joint detection of signal information based on the collected soft complex signal information associated with the group;

further comprising ~~the step of performing~~ iterative detection of signal information in the wireless communication network based on distributed successive cancellation of currently detected signal information from soft complex signal information.

53. (Currently Amended) ~~The method according to claim 38,~~ A method for detecting signal information in a wireless communication network having a number of nodes for communication, said method comprising:

- each of a plurality of receiving nodes converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information;

- collecting soft complex signal information associated with said plurality of receiving nodes over a transport network;

- jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

~~further comprising the steps of:~~

- each receiving node attempting to detect signal information based on its own soft complex signal information and, if detection of signal information from at least a subset of said transmitting nodes is successful, determining residual soft complex signal information after cancellation of currently detected signal information;

- collecting residual soft complex signal information and currently detected signal information; and

- jointly detecting signal information based on the collected residual soft complex signal information and currently detected signal information.

54. (Currently Amended) The method according to claim ~~38~~46, further comprising the steps of:

- compressing soft complex signal information on ~~the~~a receiving node side;
- collecting the compressed soft complex signal information over a transport network; and
- decompressing the compressed soft complex information before jointly detecting signal information.

55. (Cancelled)

56. (Currently Amended) The system according to claim ~~55~~64, wherein said means for jointly detecting is configured to operate based on the collected soft complex signal information in combination with a complex channel representation related to said plurality of receiving nodes (~~120~~) and said plurality of transmitting nodes (~~10~~).

57. (Previously Presented) The system according to claim 56, wherein said complex channel representation is a complex channel gain matrix.

58. (Currently Amended) The system according to claim ~~55~~64, wherein said soft complex signal information retains phase and amplitude information.

59. (Currently Amended) The system according to claim ~~55~~64, wherein said soft complex signal information is collected from said plurality of receiving nodes (~~120~~) in a central node (~~130~~), and said means for jointly detecting signal information is implemented in the central node (~~130~~).

60. (Currently Amended) The system according to claim ~~55~~64, wherein said wireless communication network is a cellular network, and said plurality of receiving nodes (~~120~~) are base stations and said plurality of transmitting nodes (~~10~~) are mobile

stations.

61. (Cancelled)

62. (Currently Amended) The system according to claim ~~61~~64, wherein said means for performing, for each group, joint detection is configured to operate based on the collected soft complex signal information associated with the group and a complex channel representation related to the receiving nodes of the group and at least a subset of said plurality of transmitting nodes.

63. (Currently Amended) The system according to claim ~~61~~64, wherein at least two of said multiple groups are partially overlapping.

64. (Currently Amended) ~~The system according to claim 61,~~ A system for detecting signal information in a wireless communication network having a number of nodes for communication, said system comprising:

- a plurality of receiving nodes, each configured for converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups;

- means for collecting soft complex signal information associated with said plurality of receiving nodes over a transport network; and

- means for jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said means for collecting soft complex signal information comprises means for collecting, for each group, soft complex signal information associated with the receiving nodes of the group;

wherein said means for jointly detecting comprises means for performing, for each

group. joint detection based on the collected soft complex signal information associated with the group; and

wherein said means for collecting, for each group, soft complex signal information associated with the receiving nodes of the group comprises means for exchanging soft complex signal information between the receiving nodes of the group.

65. (Previously Presented) The system according to claim 64, wherein each group comprises a number of adjacent receiving nodes.

66. (Previously Presented) The system according to claim 65, wherein each of the adjacent receiving nodes within a group performs joint detection of signal information transmitted from at least a subset of said plurality of transmitting nodes based on exchanged soft complex signal information.

67. (Currently Amended) The system according to claim ~~64~~64, wherein said means for performing, for each group, joint detection is implemented in a signal processing node associated with the group of receiving nodes.

68. (Previously Presented) The system according to claim 67, wherein said signal processing node is a designated receiving node that belongs to the corresponding group.

69. (Currently Amended) ~~The system according to claim 61,~~ A system for detecting signal information in a wireless communication network having a number of nodes for communication. said system comprising:

- a plurality of receiving nodes, each configured for converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups;

- means for collecting soft complex signal information associated with said plurality of receiving nodes over a transport network; and

- means for jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said means for collecting soft complex signal information comprises means for collecting, for each group, soft complex signal information associated with the receiving nodes of the group;

wherein said means for jointly detecting comprises means for performing, for each group, joint detection based on the collected soft complex signal information associated with the group; and

further comprising:

- means for generating, for each group, decoded signal information; and
- means for transporting, for each group, corresponding decoded signal information to a combining unit (140) for combining multiple copies of the same decoded signal information.

70. (Currently Amended) ~~The system according to claim 61,~~ A system for detecting signal information in a wireless communication network having a number of nodes for communication, said system comprising:

- a plurality of receiving nodes, each configured for converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information, said plurality of receiving nodes being partitioned into multiple groups;

- means for collecting soft complex signal information associated with said plurality of receiving nodes over a transport network; and

- means for jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

wherein said means for collecting soft complex signal information comprises means for collecting, for each group, soft complex signal information associated with the receiving nodes of the group;

wherein said means for jointly detecting comprises means for performing, for each group, joint detection based on the collected soft complex signal information associated with the group; and

further comprising means for performing iterative detection of signal information in the wireless communication network based on distributed successive cancellation of currently detected signal information from soft complex signal information.

71. (Currently Amended) ~~The system according to claim 55,~~ A system for detecting signal information in a wireless communication network having a number of nodes for communication, said system comprising:

- a plurality of receiving nodes, each configured for converting a superposition of signals received from a plurality of transmitting nodes to produce soft complex signal information;

- means for collecting soft complex signal information associated with said plurality of receiving nodes over a transport network; and

- means for jointly detecting said signal information in the wireless communication network from at least a subset of said plurality of transmitting nodes based on the collected soft complex signal information;

~~further comprising:~~

- means, in each receiving node, for attempting to detect signal information based on its own soft complex signal information and for determining, if detection of signal information from at least a subset of said transmitting nodes is successful, residual soft complex signal information after cancellation of currently detected signal information;

- means for collecting residual soft complex signal information and currently detected signal information; and

- means for jointly detecting signal information based on the collected residual soft complex signal information and currently detected signal information.

72. (Currently Amended) The system according to claim ~~55~~64, further comprising:

- means ~~(127)~~ for compressing soft complex signal information on the receiving node side;

- means for collecting the compressed soft complex signal information over a transport network; and

- means ~~(133)~~ for decompressing the compressed soft complex information for input of decompressed soft complex information to said means ~~(134)~~ for jointly detecting signal information.

73. (Cancelled)

74. (Cancelled)